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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the improved organic electroluminescence.

[0002]

[Description of the Prior Art]the organic layer (at least -- the layer structure of an organic luminous layer.) which comprises the anode and one layers or more which consist of transparent electrical conducting materials, such as indium oxide tin (ITO), on a transparent substrate Or the organic electroluminescence which has at least the negative pole which consists of metal electrical conducting materials, such as aluminum (aluminum), from the anode side and it comprises multilayer structure which carried out laminating formation of any they are with the organic luminous layer, such as a hole injection layer, an electron hole transporting bed, a (organic luminous layer), and an electron transport layer, For example, it is indicated by JP,6-32307,B.

[0003]This organic electroluminescence is that whose luminescence with a predetermined pattern is attained with the shape of the anode and the negative pole, By impressing the direct current voltage of several volts - tens of volts between the anode and the negative pole, luminescence according to said pattern from an organic layer can be seen through a transparent substrate, and it has an advantage whose low voltage drive becomes possible as compared with a thin film type or a distributed type electroluminescence.

[0004]

[Problem(s) to be Solved by the Invention]Although vacuum evaporation etc. form each class by a method suitably in order of the anode, an organic layer, and the negative pole in this electroluminescence, The organic layers located between them to the thickness of the anode and the negative pole being 100-200 nm are tens of nm (when only an organic luminous layer is formed) - 100 nm of numbers (when other layers are formed with an organic luminous layer),

When especially the thickness of an organic layer was thin, there was a possibility that destruction of the organic layer by concentration of an electric field might arise in the level difference part of the anode, and there was a tendency for reliability to be missing.

[0005]

[Means for Solving the Problem] This invention for solving said SUBJECT has at least the negative pole which consists of the anode which consists of a transparent electrical conducting material on a transparent substrate, an organic layer which comprises one or more layers, and a metal electrical conducting material, and is the organic electroluminescence which can emit light by a predetermined pattern, An insulating layer is made to intervene between said anode and said organic layer in parts other than said pattern.

[0006] Especially as for this invention, said insulating layer is formed with a photosensitive resin material.

[0007] This invention has at least the negative pole which consists of the anode which consists of a transparent electrical conducting material on a transparent substrate, an organic layer which comprises one or more layers, and a metal electrical conducting material, and is the organic electroluminescence which can emit light by a predetermined pattern, An insulating layer is made to intervene between said anode and said organic layer, and this insulating layer determines said pattern.

[0008] Especially this invention serves as said pattern in which parts other than a part between which said insulating layer was made to be placed can emit light.

[0009] This invention has at least the negative pole which consists of the anode which consists of a transparent electrical conducting material on a transparent substrate, an organic layer which comprises one or more layers, and a metal electrical conducting material, and is the organic electroluminescence which can emit light by a predetermined pattern, An insulating layer is made to intervene between said anode and said organic layer, and it distinguishes between intensity of luminescence of said pattern by this insulating layer.

[0010] Especially this invention serves as said pattern in which parts other than a part between which said insulating layer was made to be placed can emit light, and a part which made said insulating layer placed between dot shape serves as a shadow in said pattern, and it distinguishes between intensity of luminescence.

[0011]

[Embodiment of the Invention] The organic electroluminescence 1 has at least the negative pole 5 which consists of the organic layer 4 and metal electrical conducting material which comprise a layer of the one anodes [ three or more ] which consist of transparent electrical conducting materials on the transparent substrate 2, The insulating layer 6 is made to be placed between parts with a possibility that destruction of the organic layer 4 by concentration of an electric field may arise in the level difference part of the anode 3.

[0012]Thereby, the covering nature of the level difference part of the anode 3 is raised, the level difference of the organic layer 4 is made loose, therefore, concentration of the electric field in this level difference part can be prevented, destruction of the organic layer 4 can be prevented, and the reliability of the organic electroluminescence 1 can be raised.

[0013]By using a photosensitive resin material as a material for forming the insulating layer 6 especially, it is easy to make arbitrary shape and manufacture becomes easy.

[0014]It has the anode 3, the organic layer 4, and the negative pole 5 at least on the transparent substrate 2, it is the organic electroluminescence 1 which can emit light by the predetermined pattern A, and the insulating layer 6 is made to intervene between the anode 3 and the organic layer 4, and the pattern A is determined from this insulating layer 6.

[0015]Thereby, without managing the shape of the anode 3 or the negative pole 5 strictly, what is necessary is just to manage even the mask member used at the time of the film formation of the insulating layer 6 with easy formation, and manufacture becomes easy.

[0016]It is also possible to determine the pattern A only by the insulating layer 6 especially, and the manufacturing process of the organic electroluminescence 1 can be simplified further.

[0017]It has the anode 3, the organic layer 4, and the negative pole 5 at least on the transparent substrate 2, it is the organic electroluminescence 1 which can emit light by the predetermined pattern A, and the insulating layer 6 is made to intervene between the anode 3 and the organic layer 4, and it distinguishes between the intensity of luminescence of the pattern A by this insulating layer 6.

[0018]Thereby, between the anode 3 and the negative pole 5 between which it is placed by the insulating layer 6, since an electric field becomes small and the intensity of luminescence of the organic layer 4 becomes small compared with other parts, the new display style by which the shape of the insulating layer 4 distinguished between the intensity of luminescence with the pattern A (shade) is realizable.

[0019]By becoming the pattern A in which parts other than the part between which the insulating layer 6 was made to be placed especially can emit light, and making a part of insulating layer 6 into the insulating layer 61 for shades between which dot shape was made to be placed, The part in which this insulating layer 61 for shades was formed serves as the shadow B in the pattern A, and the organic electroluminescence 1 can perform the display with a cubic effect.

[0020]

[Example]This invention is explained based on each example shown in the accompanying drawing.

[0021]Drawing 1 starts the 1st example of this invention, and the organic electroluminescence 1, the organic layer 4 (at least -- the layer structure of an organic luminous layer.) which comprises a layer of the one anodes [ three or more ] which consist of transparent electrical

conducting materials, such as ITO, on the transparent substrate 2 Or in the point of having at least the negative pole 5 which consists of metal electrical conducting materials, such as aluminum, and it comprises multilayer structure which carried out laminating formation of any they being with the organic luminous layer, such as a hole injection layer, an electron hole transporting bed, a (organic luminous layer), and an electron transport layer, from the anode side, it is the same as that of a conventional example.

[0022]And the organic electroluminescence 1 is that whose luminescence with the predetermined pattern A is attained with the shape of the anode 3 and the negative pole 5, By impressing the direct current voltage of several volts - tens of volts between the anode 3 and the negative pole 5, luminescence according to the pattern A from the organic layer 4 can be seen through the transparent substrate 2.

[0023]The feature of this example is in the point of making the insulating layer 6 placed between parts with a possibility that destruction of the organic layer 4 by concentration of an electric field may arise in the level difference part of the anode 3, and by this, The covering nature of the level difference part of the anode 3 is raised, the level difference of the organic layer 4 is made loose, therefore, concentration of the electric field in this level difference part can be prevented, destruction of the organic layer 4 can be prevented, and the reliability of the organic electroluminescence 1 can be raised.

[0024]As a material for forming such an insulating layer 6, the photosensitive resin material which arbitrary shape tends to make is desirable.

[0025]The 2nd example of this invention is started, drawing 2 and drawing 3 are the same as that of said example, or identical codes are given to a considerable part and they omit the detailed explanation.

[0026]It had the anode 3, the organic layer 4, and the negative pole 5 at least on the transparent substrate 2, it is the organic electroluminescence 1 which can emit light by the predetermined pattern A, and the insulating layer 6 is made to intervene between the anode 3 and the organic layer 4, and the pattern A is determined from this insulating layer 6. That is, the anode 3 is formed in shape [\*\*\*\* / the pattern A ], and the negative pole 5 is formed in what is called solid shape that has an area large enough which includes the pattern A, and it has determined the pattern A by extracting the actual pattern A and making the insulating layer 6 intervene.

[0027]If even the mask member used at the time of the film formation of the insulating layer 6 with easy formation is managed by this, without managing the shape of the anode 3 or the negative pole 5 strictly, the predetermined pattern A can be formed easily.

[0028]Both the anode 3 and the negative pole 5 are formed in what is called solid shape, it is also possible to determine the pattern A only by the insulating layer 6, and the manufacturing process of the organic electroluminescence 1 can be simplified further.

[0029]The 3rd example of this invention is started, drawing 4 and drawing 5 are the same as that of said example, or identical codes are given to a considerable part and they omit the detailed explanation.

[0030]\*\*\*\*\* which have the anode 3, the organic layer 4, and the negative pole 5 at least, and are the organic electroluminescence 1 which can emit light by the predetermined pattern A, and the insulating layer 6 is made to intervene between the anode 3 and the organic layer 4 on the transparent substrate 2, and distinguishes between the intensity of luminescence of the pattern A by this insulating layer 6.

[0031]That is, between the anode 3 and the negative pole 5 between which it is placed by the insulating layer 6, an electric field becomes small and the intensity of luminescence of the organic layer 4 becomes small compared with other parts. Therefore, the new display style which was able to distinguish between the intensity of luminescence with the pattern A with the shape of the insulating layer 4 (shade) is realizable. This is possible if even the mask member used at the time of the film formation of the insulating layer 6 with easy formation is managed, and it gives an opportunity to create new utility value to the organic electroluminescence 1 only whose superficial display was completed.

[0032]For example, by becoming the pattern A in which parts other than the part between which the insulating layer 6 was made to be placed can emit light, and making a part of insulating layer 6 into the insulating layer 61 for shades between which dot shape was made to be placed, The part in which this insulating layer 61 for shades was formed serves as the shadow B in the pattern A, and the organic electroluminescence 1 can perform the display with a cubic effect.

[0033]

[Effect of the Invention]According to this invention, reliability is raised, manufacture becomes easy and the organic electroluminescence which has a new display style can be provided.

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[Translation done.]